SCHMIDT ⊙ BENDER

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User manual for PMII scopes

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User manual for PMII scopes

1. Introduction

Schmidt & Bender congratulates you for purchasing your new “PMII” scope.
The scopes of the Schmidt & Bender PMII series are designed to meet the unique challenges of high precision shooting. Their quality and function make it possible to achieve exceptional shooting results as well to fulfil the critical and demanding needs of official, law enforcement and tactical applications. Strict observation of the following operating instructions is prerequisite for successful long-term use.

2. Safety instructions

Never look into the sun with the scope. This may cause serious eye injuries.

To avoid injuries always keep the correct eye relief distance when shooting.

Do not tamper with the scope. Any repairs going further than the maintenance described in the maintenance manual should only be done by Schmidt & Bender or by other specialists authorized by Schmidt & Bender.

Protect the scope against shocks beyond normal use.

Avoid unnecessarily long exposure of the scope to direct sunlight; intense and excessive sun radiation will cause extremely high temperatures inside the tube which may be detrimental to the scope.

3. Adjusting the image focus with the diopter adjustment of the eyepiece

Set the scope to the highest magnification. Rotate the eyepiece counter-clockwise to its stop. Rotate the eyepiece clockwise until you see a sharp image of the reticle. See picture 1.

4. Mounting the scope to a firearm

4.1. General information

The firearm and the scope must be united by proper mounting. Therefore we recommend to get this done by a qualified specialist. Perfect mounting is an essential requirement for maximum accuracy and efficient functioning of the firearm and the scope together.
Special attention should be paid to allowing sufficient eye relief. This will make the complete field of view available to the shooter while avoiding eye injuries caused by the firearm's recoil.
For mounting 10x42 PMII mount rings with a 30mm diameter are required. For the variable power scopes of the PMII series mount rings with 34mm diameter are required. The mount should be rugged and of good quality. For safety reasons we recommend that the lower part of the rings should be glued.

4.2. Adjustment range and forward angle

Scopes for high precision shooting are often used for shooting at great distances. In this case the elevation adjustment is used to compensate for bullet drop. To provide an extensive elevation range in these scopes Schmidt & Bender has increased the main tube diameter from 30mm to 34mm. Nevertheless the elevation and windage range like in any other scope is limited.

In scopes for hunting the reticle is generally centered optically and mechanically in order to receive the same amount of travel in all directions and to make the mounting of the scope to the firearm easier (see picture 2).

In order to make the elevation adjustment range usable in its full extent it is necessary to preset the reticle of the PMII scopes out of the center already at the Schmidt & Bender factory (see picture 3). As a consequence the gunsmith is obliged to consider the preset position of the reticle in the elevation range when mounting the scope to the firearm (see picture 4). With this setup the full elevation range is usable in one direction allowing to shoot at distances up to 2000m depending on the used calibre and scope type.

Determining the correct forward angle
The necessary forward angle is depending on the used type of elevation adjustment. At the Schmidt & Bender factory the reticles of PMII scopes are adjusted out of center by half the amount of the full elevation range. This value must be compensated in the mount system.
Forward angled mounts or rails for every Schmidt & Bender PMII scope type are available from all renowned mount manufacturers.

Example for determining the required forward angle:
A standard elevation turret (Single Turn) with an elevation range of 13mrad (equals 130cm at 100m distance) requires a forward angle of 65cm at 100m (equalling the half of the full elevation range). For a gunsmith compensating for this value using the mounts the following rule of thumb applies: If the space between the two mount rings is 100mm the front mount should be 0.65mm lower than the rear mount.

If the gunsmith is using a forward angled rail standard mount rings without forward angled can be used.

4.3. Preliminary adjusting and fine adjusting when sighting in

Make sure that both elevation and windage are set to “0”. If the scope is equipped with a Double Turn elevation turret the windows on top of the turret must show black (see picture 5). Mount the scope to the firearm and pre-adjust the scope to a target at 100m distance using all adjustment facilities the mounts provide so that the least possible amount of elevation range must be used at the scope for fine adjustment. Before sighting in unlock the two setscrews in the outside diameter of both elevation an windage turret using an Allen key (see picture 6). Lift each turret cap until the black o-ring underneath can be seen. Lock the setscrews again (see picture 7). The turret caps can no be adjusted in all directions for fine adjustment.
With every click the reticle will travel by the amount indicated on the turret cap. A too low point of impact is corrected by rotating the elevation turret clockwise (see picture 8), a too high point of impact by rotating the elevation turret counter-clockwise.
A too far left point of impact is corrected by rotating the windage turret clockwise (see picture 9), a too far right point of impact is corrected by rotating the turret counter-clockwise.

ATTENTION: for COUNTER-CLOCKWISE elevation and windage versions the corrections for point of impact are to be made in the opposite directions!

After sighting in unlock the setscrews of both elevation and windage turret caps again (see picture 10) and position the turret caps so that the “0” of each turret lines up with the index mark (triangle) at each saddle. Assure that the turrets do not rotate (and change the position of the reticle) while doing this. Press the turret caps completely down (see picture 11) and lock the setscrews again (see pictures 12).

When the scope is equipped with a Double Turn elevation turret make sure that the colour in the windows on top of the turret cap show black still. In case the colour has changed to yellow proceed as follows: Unlock the setscrews in the outside diameter of the Double Turn turret again, pull the turret cap up and take it off completely. Position the slotted steel cylinder (see picture 13) in the inside of the turret cap in its end position (a screw driver or similar tool can be used for rotating the cylinder). Choose the position that provides that the windows on top of the turret cap show black colour. Now place the turret cap on the elevation turret again as described before.

5. Function of the Double Turn turret

The Double Turn elevation provides a fine click adjustment value with a big elevation adjustment range at the same time. Instead of having only one revolution for the full elevation range the Double Turn turret – as the name is implying - uses two revolutions for the full elevation range. As described in the chapter “Preliminary adjusting and fine adjusting when sighting in” the elevation gets sighted in and thus is set to “0”. Starting from this position the complete elevation range is usable. If the elevation is set to a position within the first revolution the windows on top of the turret cap show black color (see picture 5) indicating that the shooter must refer to the lower scale on the turret cap. If the turret is rotated into the second revolution the windows change color to yellow (see picture 14) clearly indicating that the elevation is in the second revolution and the shooter now must refer to the yellow scale. Even at poor light conditions the shooter can easily recognize in which revolution the turret is set at every given time and thus to what value the elevation is set.

6. Determining individual values for bullet drop compensation

By shooting at varying distances and recording the corresponding click values in a table you can make your own individual bullet drop compensation charts. In contrast to the common technique of calibrating adjustment turrets to “predetermined” trajectory tables provided by ammunition manufacturers our recommended procedure takes all factors into account that have a influence on the bullet drop – the firearm, the mount and the used ammunition. This will result in extremely precise bullet drop tables created specifically for your firearm.

7. Parallax adjustment

All PMII models without parallax adjustment are preset at the Schmidt & Bender factory to be parallax-free at 300m unless a different distance is specified.
PMII models with parallax adjustment turret are equipped with a third turret (see picture 15) opposite the windage turret. With this turret the shooter can easily focus targets at any distance without having to interrupt the target acquisition.

The parallax adjustment turret is engraved with distance markings. If the distance to the target is known rotate the turret so that the corresponding distance marking lines up with the index mark on the saddle.

If the distance to the target is not known set the scope to the highest magnification. Rotate the parallax adjustment in direction of the estimated distance until you see a sharp image of the target.
The parallax is now set correctly and you can read the approximate distance on the parallax adjustment turret.

8. Using the illumination control

The illuminated reticle is designed to help in finding the correct aiming point on a dark target and/or poor light conditions.
First, set the intensity of the illuminated reticle to the respective light conditions. To do this the illumination control can be turned from setting 0 toward setting 11 until the setting is achieved where the illuminated portion of the reticle is just bright enough to be picked up by the eye without glaring. If possible this adjustment should be performed in quit quiet circumstances before the actual shooting.
To save battery power the illumination can now be switched off by a slight turn of the illumination control halfway between the chosen and the next setting (before or after the chosen setting). In this interposition the power supply is interrupted (“stand-by mode”, see picture 16). Immediately before shooting the illumination control now can be turned back into the before chosen position and the reticle will now illuminate with the correct intensity. In case the illumination does not get switched off by the shooter after use the illumination control electronics automatically switches off the illumination after 6 hours.

9. Changing the battery

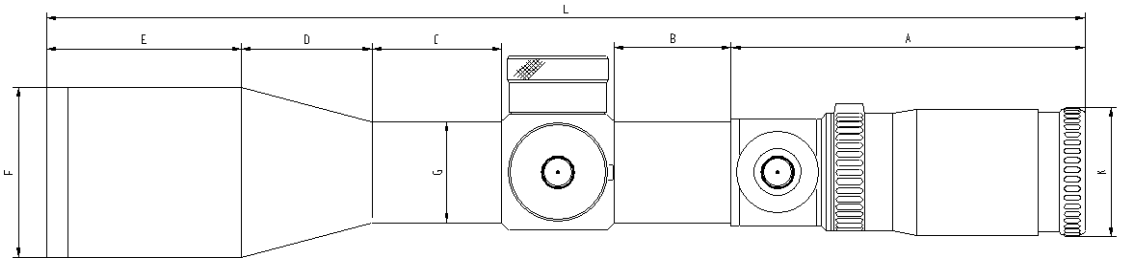
For exchanging the battery screw off the battery cap and remove the old battery. Please discard the used battery in an ecologically compatible way! Place the new battery (coin cell CR 2032/3V) with the “+” facing up into the battery compartment. Do only change the battery in a dry environment.
The battery lifetime is minimum 100 hours set to highest intensity.
See picture 17.

10. Maintenance

Schmidt & Bender PMII scopes do not require any special maintenance.
All metal parts have a hard anodized surface that is extremely scratch-resistant and easy to care for. For cleaning use a clean and if necessary a slightly damp cloth.

For cleaning the optics please use the included cleaning kit from Schmidt & Bender. Before wiping the optic surfaces clean use a dry brush for removing coarse dirt or dust particles. Slight impurities can then be wiped of using an optics cleaning cloth. Breathe onto the optics surfaces before cleaning them, this helps with the cleaning process. Coarse impurities can either be cleaned using the cleaning liquid included in the cleaning kit or with lukewarm, surface tension removed water.
Avoid dry rubbing on the outside optical surfaces because this can harm the valuable coatings.

11. Dimensions of PMII scopes



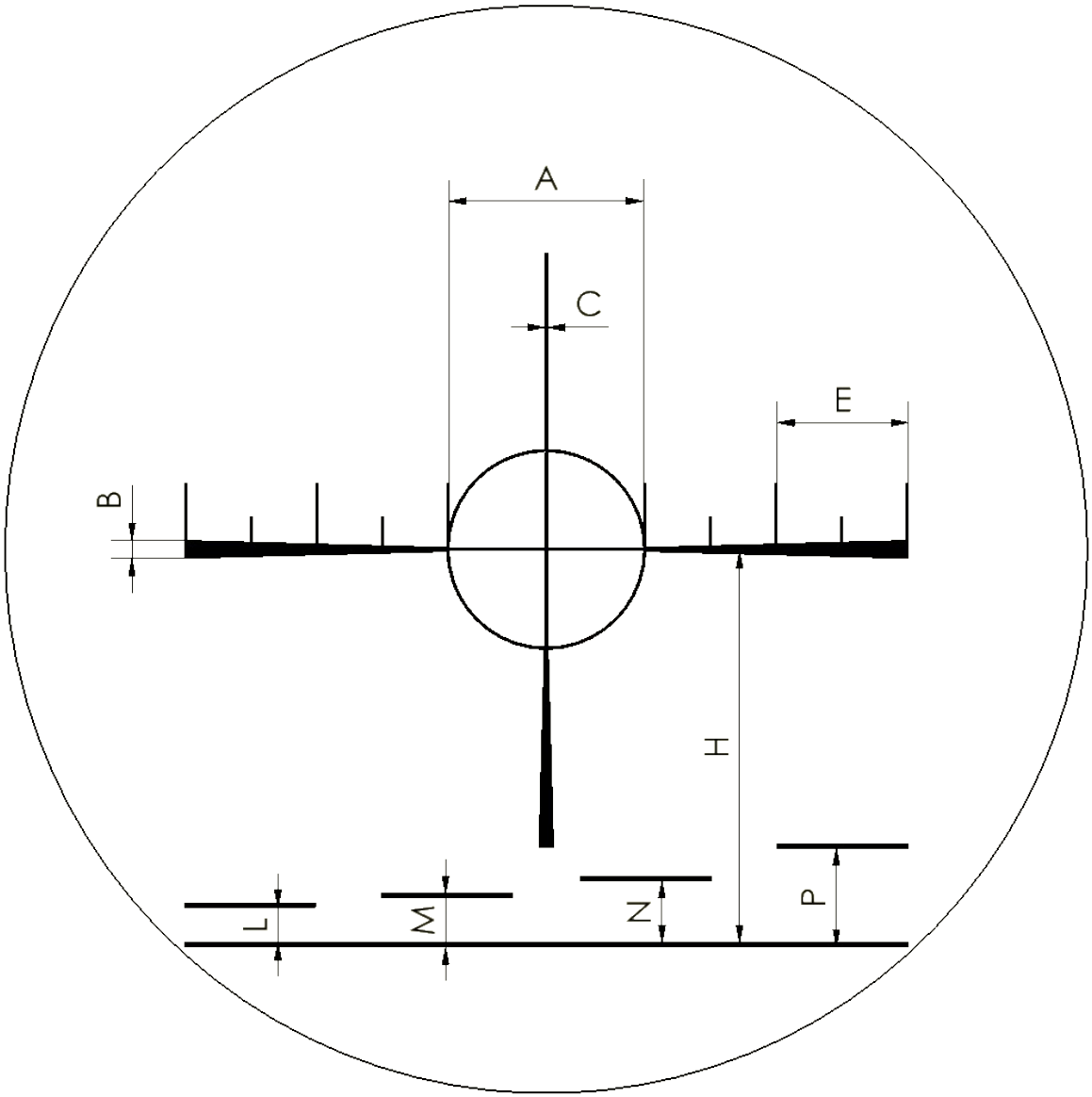
model	A	B	C	D	E	F	G	K	L	
10x42 PMII	85	60	54	55	54	50	30	43	338	
3-12x50 PMII	90	65	43	44	65	57	34	43	345	
3-12x50 PMII/P	90	65	43	44	65	57	34	43	345	
3-12x50 PMII/LP	118	38,5	43	44	65	57	34	43	345	
4-16x42 PMII/LP	118	38,5	64	62	76	50	34	43	393	
4-16x50 PMII/P	90	65	41	85	76	57	34	43	393	
4-16x50 PMII/LP	118	38,5	41	85	76	57	34	43	393	
5-25x56 PMII/LP	118	44	38,5	92	72	62	34	43	410	

12. Technical data

	10x42 PMII	3-12x50 PMII	3-12x50 PMII/P	3-12x50 PMII/LP	4-16x42 PMII/LP	4-16x50 PMII/P	4-16x50 PMII/LP	5-25x56 MII/LP
Magnification	10	3-12	3-12	3-12	4-16	4-16	4-16	5-25
Field of view in m	4	11,1 - 3,4	11,1 - 3,4	11,1 - 3,4	7,5 - 2,35	7,5 - 2,35	7,5 - 2,35	5,3 - 1,5
Exit pupil in mm	4,2	14,3 - 4,3	14,3 - 4,3	14,3 - 4,3	10,5 – 2,6	12,5 - 3,1	12,5 - 3,1	10,95 - 2,28
Eye relief distance in mm	90	90	90	90	90	90	90	90
Twilight factor	20,5	8,5-24,5	8,5-24,5	8,5-24,5	11,3 -25,9	11,3 -28,3	11,3 -28,3	14,1-37,4
Transmission min.	90%	90%	90%	90%	90%	90%	90%	90%
Diopter adjustment	+2 to -3 dptr.	+2 to -3 dptr.	+2 to -3 dptr.	+2 to -3 dptr.	+2 to -3 dptr.	+2 to -3 dptr.	+2 to -3 dptr.	+2 to -3 dptr.
Elevation adjustment Single Turn (w/o turret cap) in cam/100m	250	200	200	200	160	160	160	-----
Elevation adjustment Double Turn (w/o turret cap) in cm/100m	-----	250	250	250	160	160	160	300
Windage adjustment in cm/100m for Single Turn elevations	+/- 125	+/-100	+/-100	+/-100	+/-75	+/-75	+/-75	-----
Windage adjustment in cm/100m for Double Turn elevations	-----	+/-75	+/-75	+/-75	+/-75	+/-75	+/-75	+/-80
Parallax adjustment	300m fix	300m fix	50m bis ∞	50m bis ∞	50m bis ∞	50m bis ∞	50m bis ∞	10m bis∞
Illumination	-----	-----	-----	X	X	-----	X	X
Timer	-----	-----	-----	6 h	6 h	-----	6 h	6h
Reticles	P1/P3	P1/P3/	P1/P3/	P3L/P4/P4f/ Mil-Dot Gen. II*	P3L/P4f / Mil-Dot Gen. II*	P3L/P4f / Mil-Dot Gen. II*	P3L/P4f / Mil-Dot Gen. II*	P3L/P4f / Mil-Dot Gen. II*
Weight in g (w/o. Double Turn)	610	720	830	860	875	903	933	1080g
Water proofness	300mbar inner pressure	300mbar inner pressure	300mbar inner pressure	300mbar inner pressure	300mbar inner pressure	300mbar inner pressure	300mbar inner pressure	300mbar inner pressure

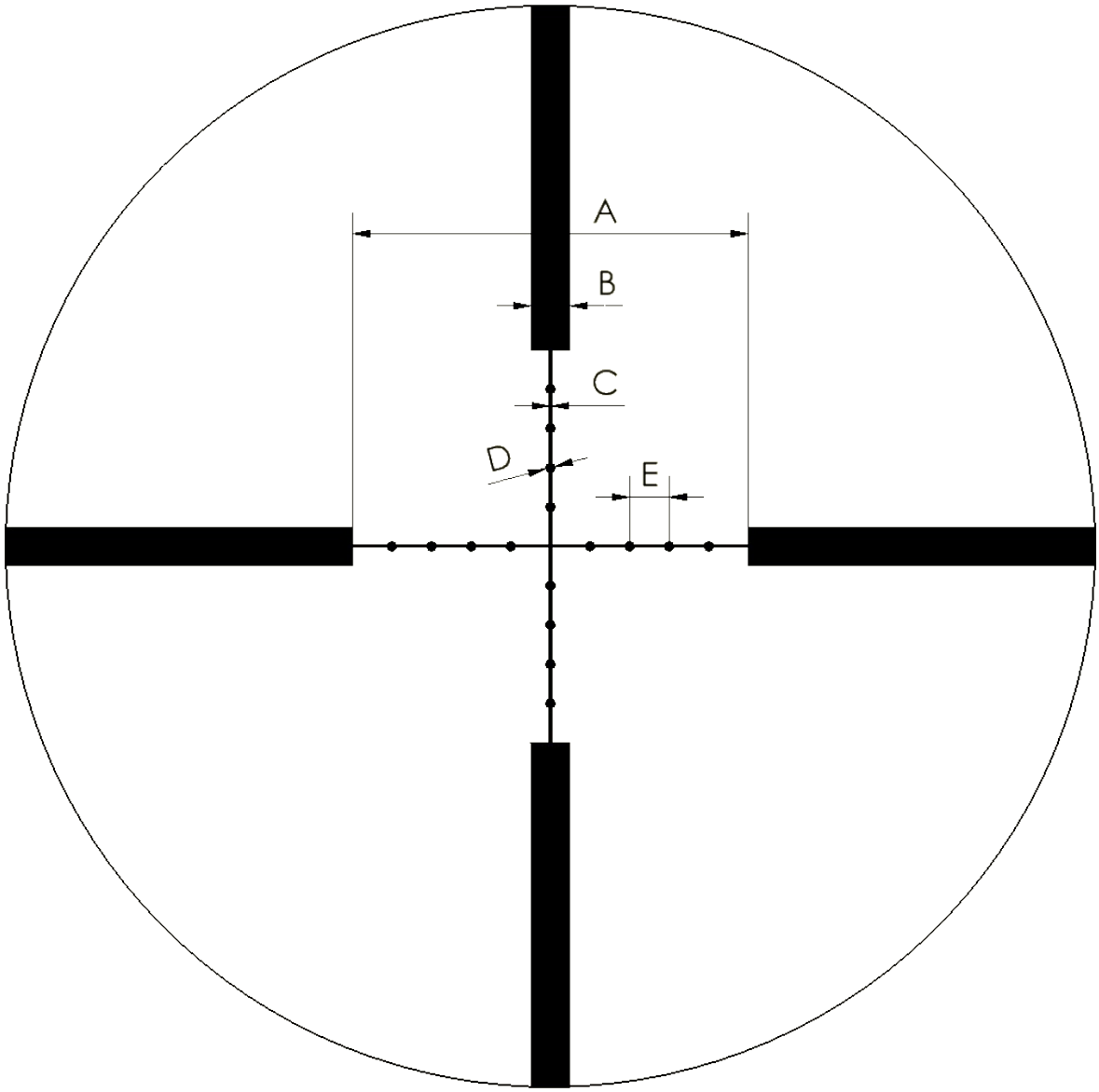
*** registered trademark of Premier Reticles Ltd.**

13. Reticles



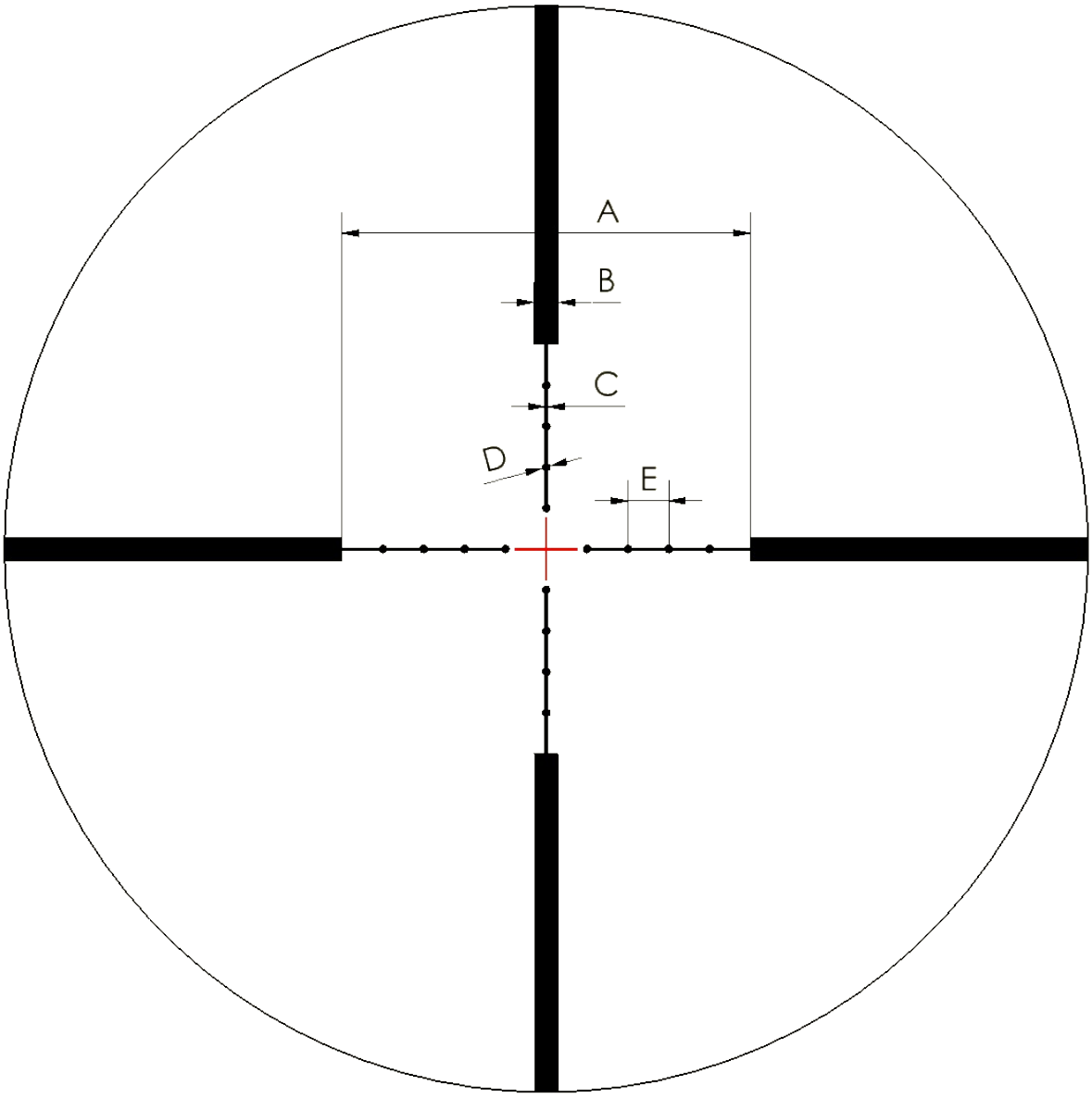
P1 Bryant

Dimension	A	B	C	E	H	L	M	N	P
cm/100m	50	4,15	0,67	33,33	100	10	12,5	16,7	25
In/100y	18,00	1,50	0,24	12,00	36,00	3,60	4,50	6,00	9,00



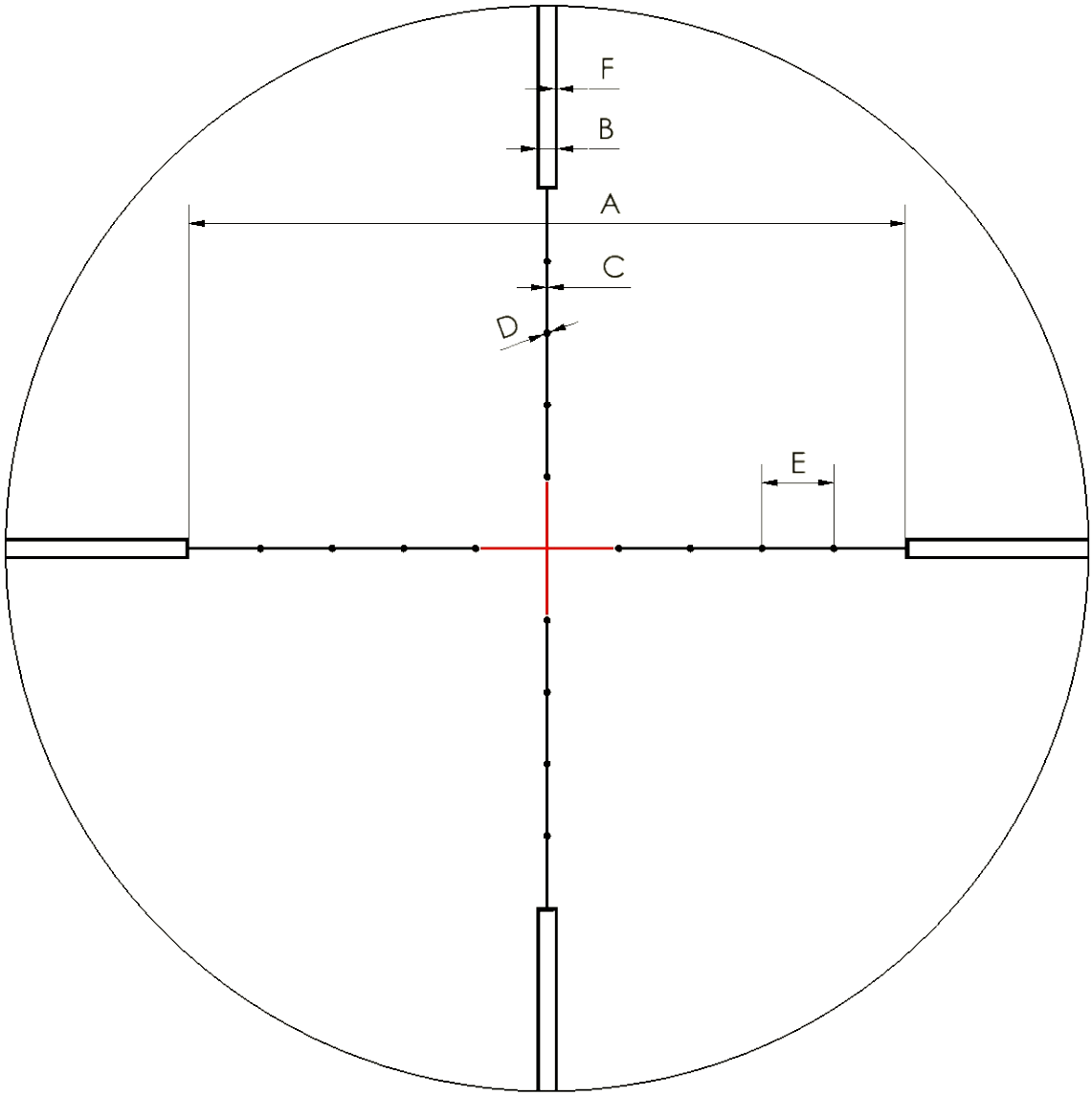
P3 Mil-Dot

Dimension	A	B	C	D	E
cm/100m	100	10	0,67	2,5	10
in/100y	36,00	3,60	0,24	0,90	3,60



P3L Mil-Dot illuminated

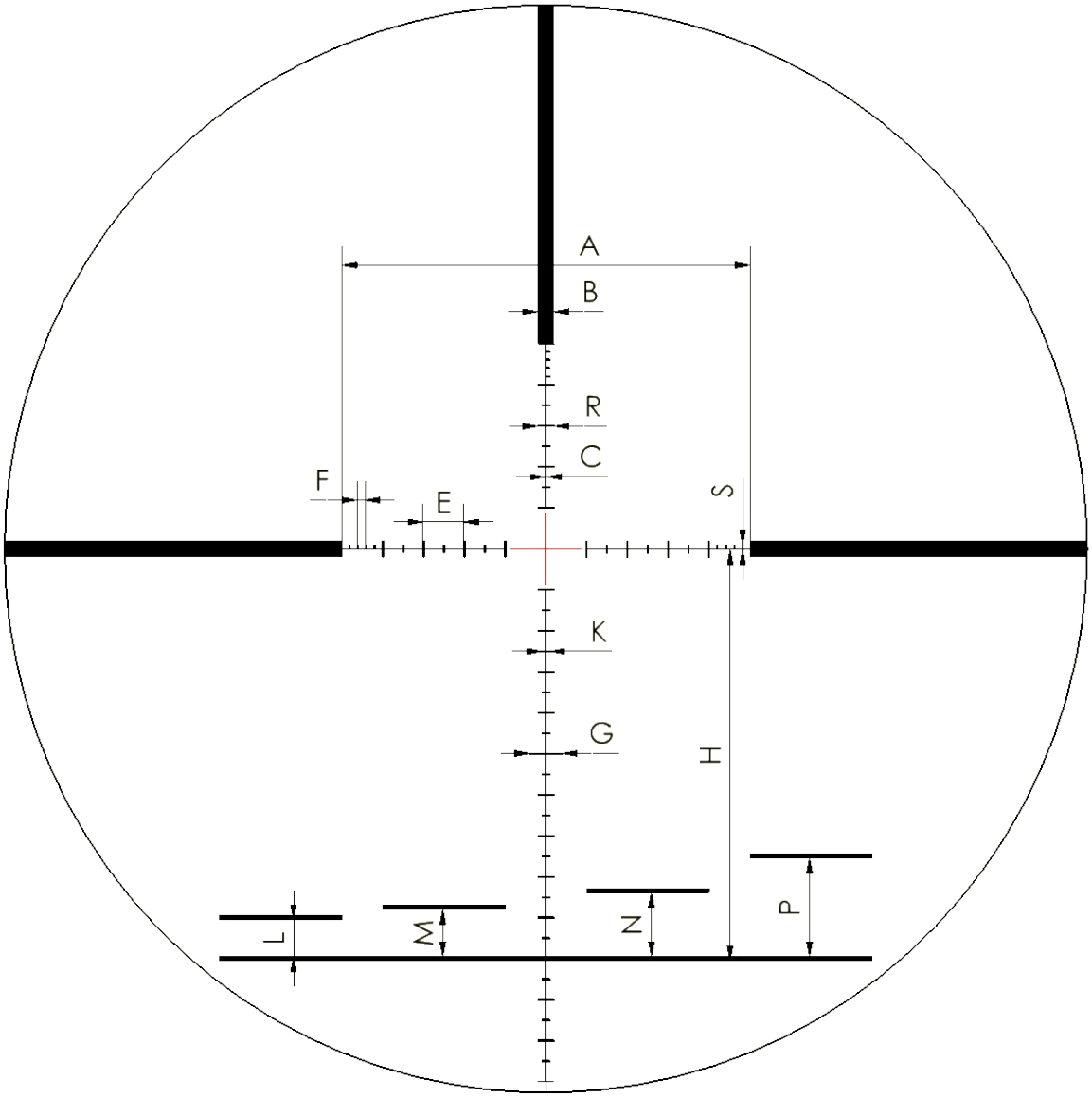
Dimension	A	B	C	D	E
cm/100m	100	10	0,67	2	10
in/100y	36	3,60	0,24	0,72	3,60



P3L Mil Dot illuminated 2nd focal plane

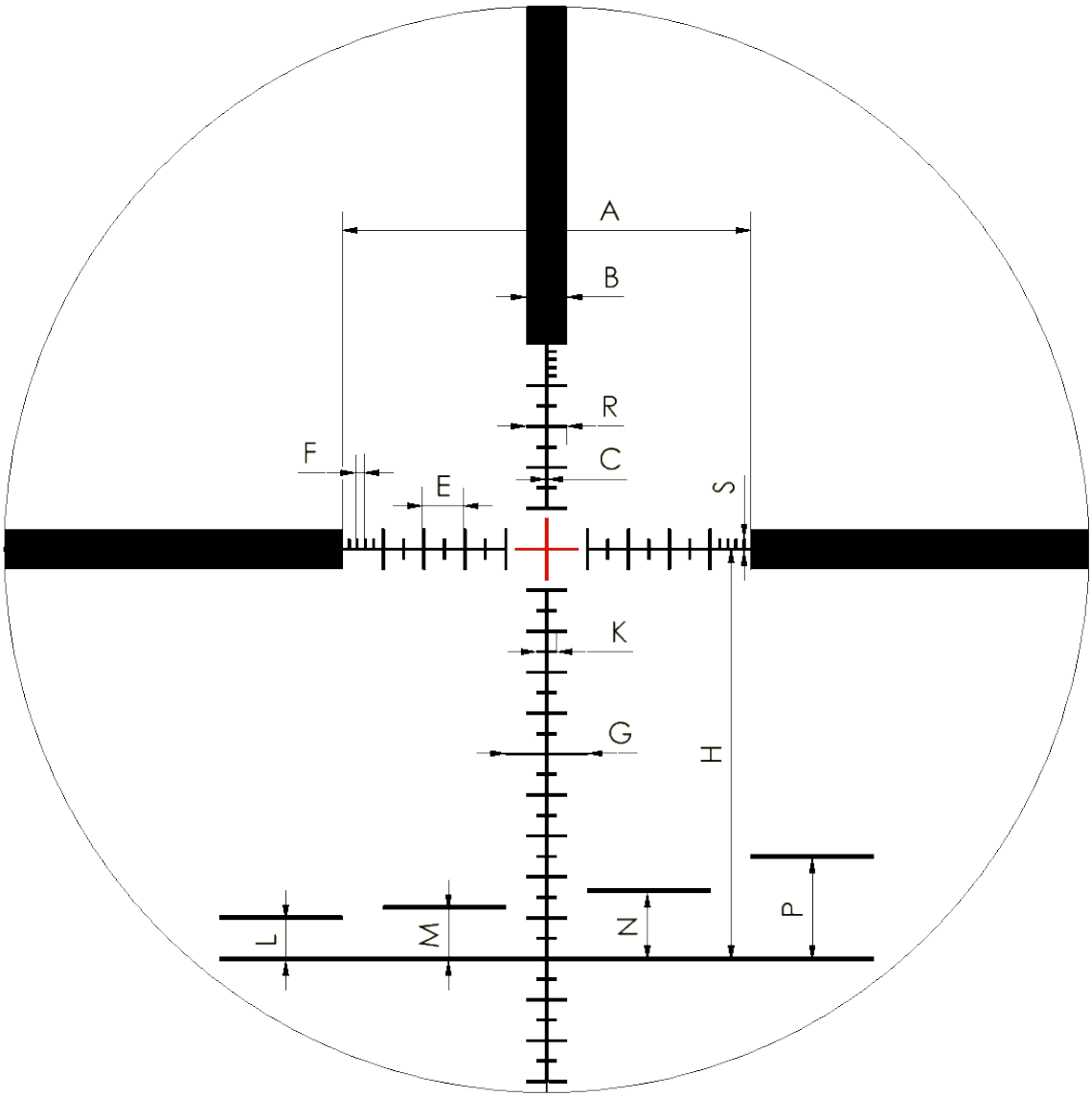
Dimension	A	B	C	D	E
cm/100m	100	3,0	0,3	1	10
in/100y	36	1,08	0,11	0,36	3,60

Coverages at magnification 25x



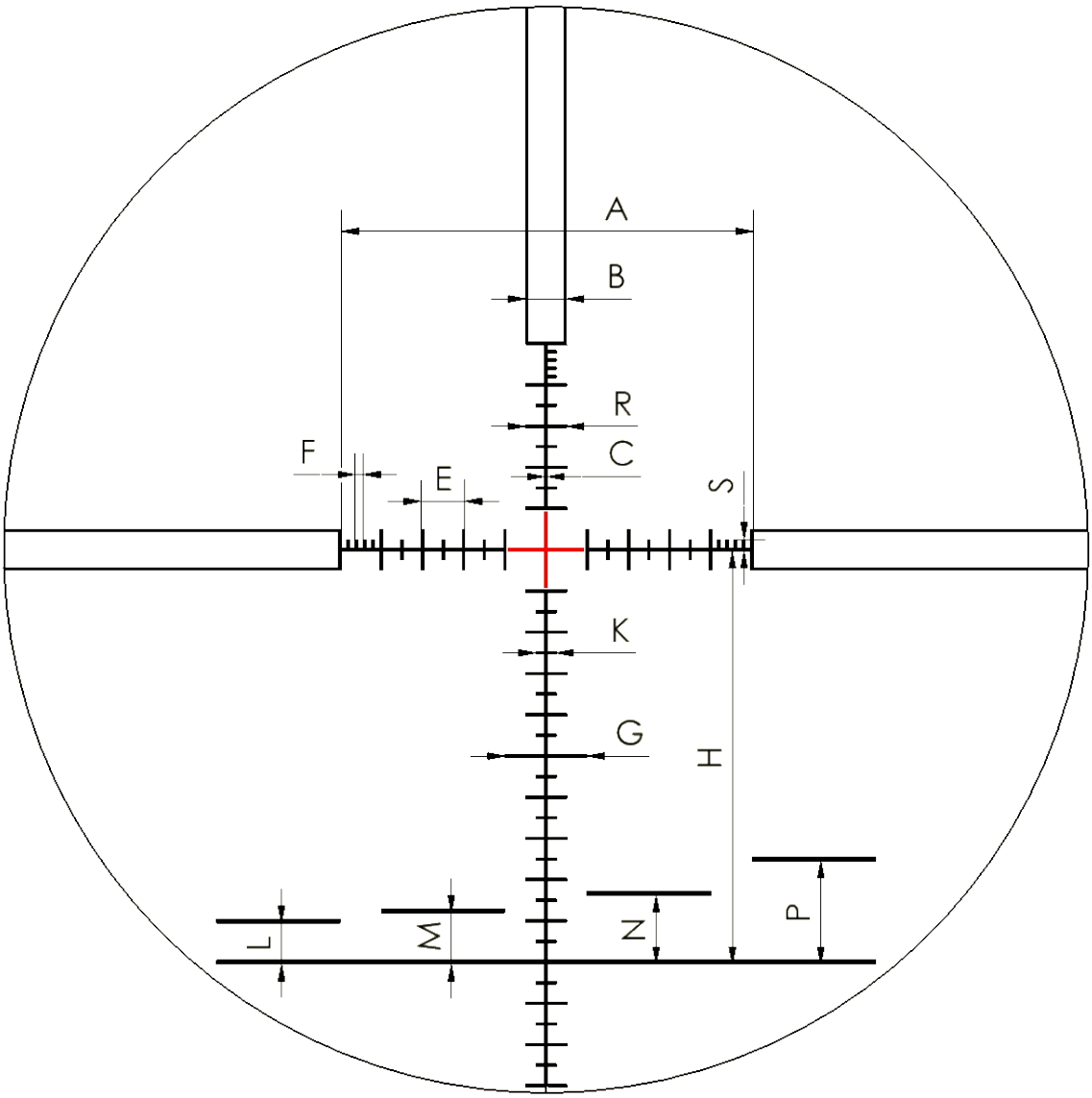
P4L fine

Dimension	A	B	C	E	F	G	H	K	L	M	N	P	R	S
cm/100m	100	4	0,35	10	2	8	100	4	10	12,5	16,7	25	4	2
in/100y	36	1,44	0,13	3,6	0,72	2,88	36	1,44	3,6	4,5	6,01	9	1,44	0,72



P4L 1st focal plane

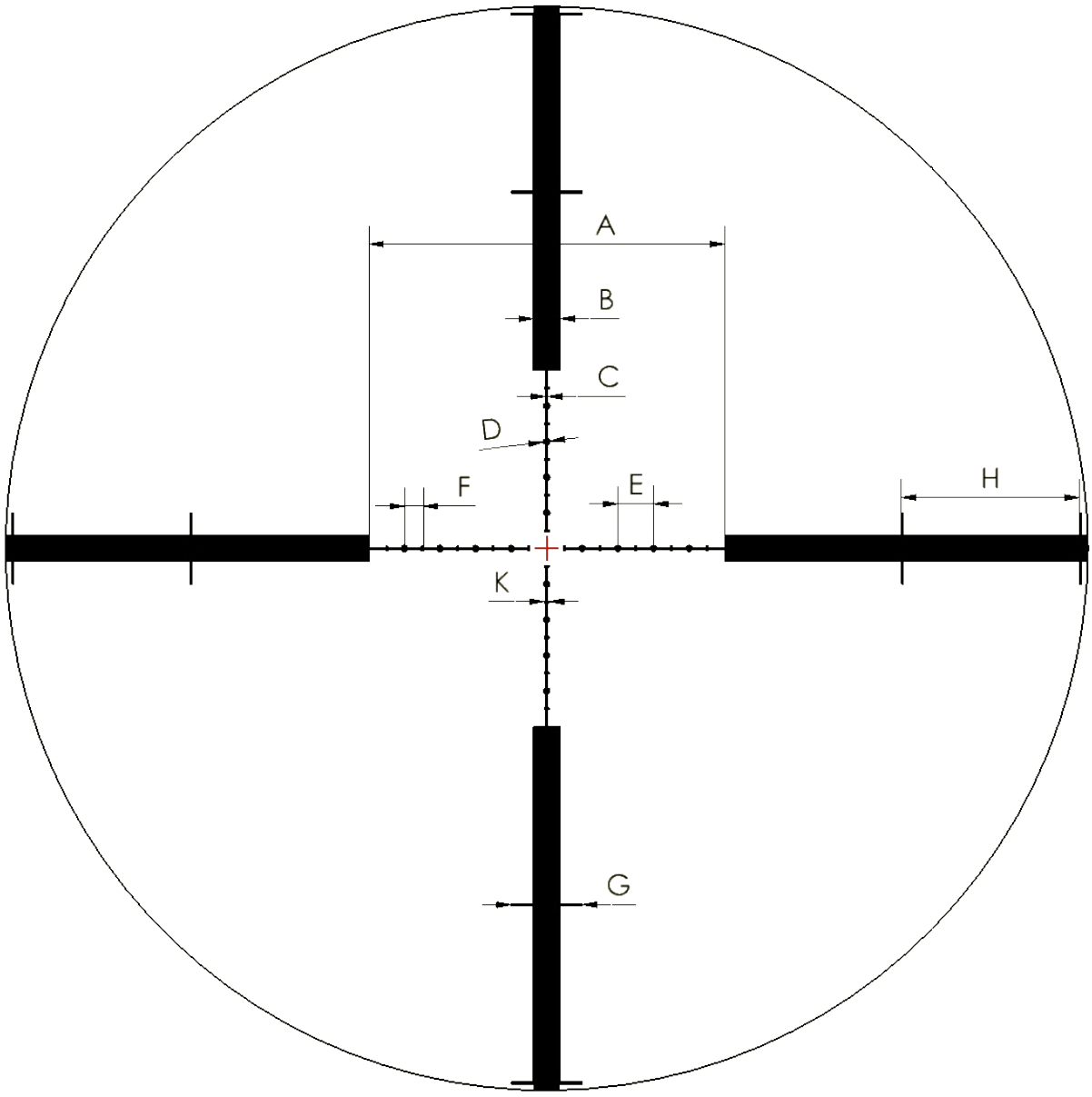
Dimension	A	B	C	E	F	G	H	K	L	M	N	P	R	S
cm/100m	100	10	0,67	10	2	20	100	5	10	12,5	16,7	25	10	2,5
in/100y	36	3,6	0,24	3,6	0,72	7,2	36	1,8	3,6	4,5	6,01	9	3,6	0,8



P4L 2nd focal plane

Dimension	A	B	C	E	F	G	H	K	L	M	N	P	R	S
cm/100m	100	10	0,67	10	2	20	100	5	10	12,5	16,7	25	10	2,5
in/100y	36	3,6	0,24	3,6	0,72	7,2	36	1,8	3,6	4,5	6,01	9	3,6	0,8

Coverages at magnification 25x



Mil - Dot Gen.II
(registered trademark of Premier Reticles Ltd.)

Dimension	A	B	C	D	E	F	G	H	K
cm/100m	100	7,5	0,61	2	10	5	20	50	1,5
In/100y	36	2,7	0,22	0,72	3,6	1,8	7,2	18	0,54

SCHMIDT ⊙ BENDER

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Warranty Certificate

We hereby certify that our Quality Management System has been approved by Unternehmensgruppe TÜV Rheinland Berlin Brandenburg to the following Quality Management Standard:

The TÜV Cert Certification Body of TÜV Anlagentechnik GmbH (Unternehmesgruppe TÜV Rheinland Berlin Brandenburg) certifies in accordance with TÜV Cert procedures that

Schmidt & Bender GmbH & Co. KG, Am Grossacker 42, D-35444 Biebertal

has established and applies a quality management system for

Construction, production sales and service of fine mechanical optical instruments
Main product Telescopic sights

Proof has been furnished that the requirements according to

DIN ISO 9001:2000 - # Registration no 01 100 67280 – valid until 31st May 2009

are fulfilled

All parts have been thoroughly inspected in accordance with the before-mentioned Quality Management System and correspond to the requirements to the specifications, drawing, test procedures and standards in all respects.

Guarantee clause:

Official legal guarantee period of 2 years (according to the EU rules)

Schmidt & Bender GmbH & Co. KG
Am Grossacker 42
35444 Biebertal
Germany

Garantie-und Werksbescheinigung

Die TÜV Cert-Zertifizierungsstelle der TÜV Anlagentechnik GmbH (Unternehmesgruppe TÜV Rheinland Berlin Brandenburg) bescheinigt gemäß TÜV Cert-Verfahren, dass das Unternehmen Schmidt & Bender GmbH & Co. KG, Biebertal, Deutschland
für den Geltungsbereich

Konstruktion, Herstellung, Vertrieb und Service feinmechanisch-optischer Geräte Hauptprodukt: Zielfernrohre

ein Qualitätsmanagementsystem eingeführt hat und anwendet; die Forderungen der
DIN EN ISO 9001:2000 (# Registration nr 01 100 67280) sind erfüllt

Gültigkeit des Zertifikats: 31. Mai 2009

Alle Teile wurden eingehend gemäß den Anforderungen des vorab genannten Systems geprüft und entsprechen diesen in allen Punkten.

Offizielle gesetzliche Garantie-Gewährleistung: 2 Jahre (gem. EU-Richtlinien)

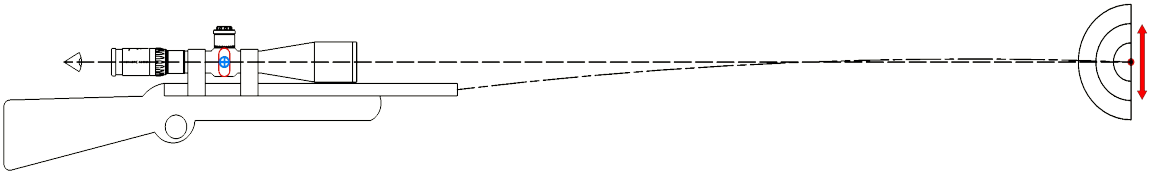
Schmidt & Bender GmbH & Co. KG
Am Grossacker 42
35444 Biebertal
Deutschland

Material supplied:
Liefergegenstand

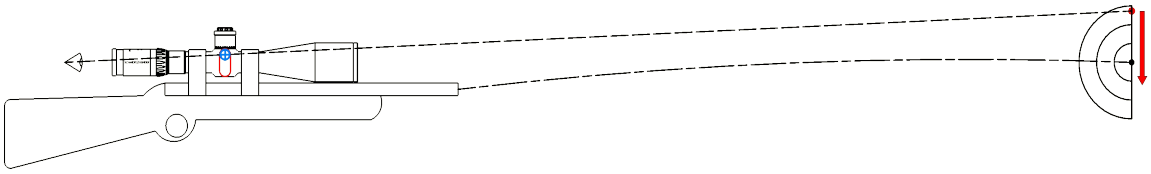
Schmidt & Bender telescopic sight / Schmidt & Bender Zielfernrohr scope label / Zielfernrohr Etikett

Pictures

picture1



Picture2



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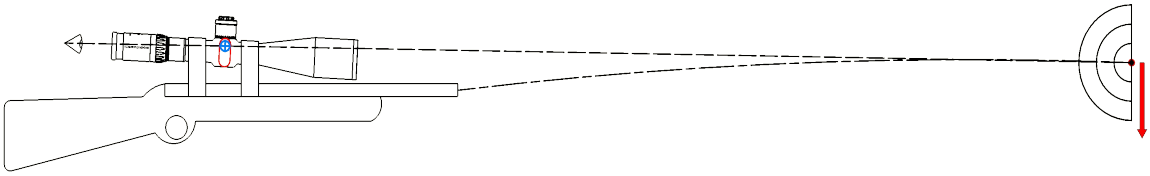

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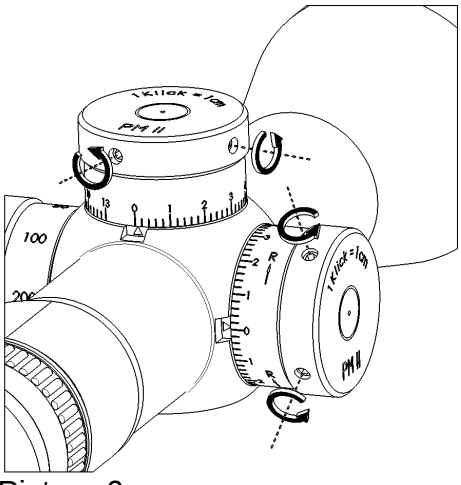
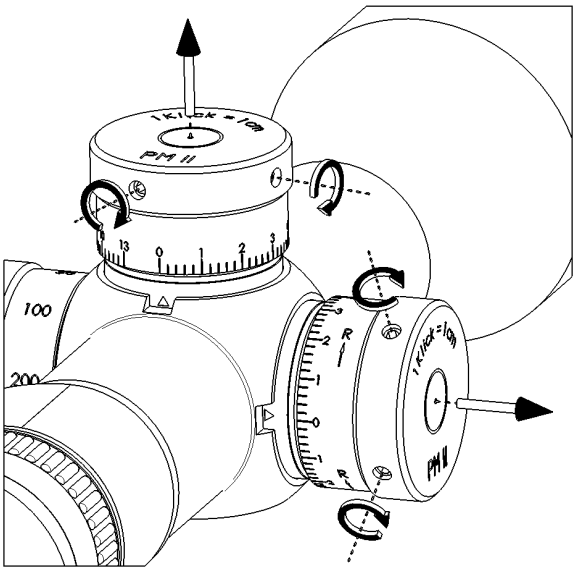
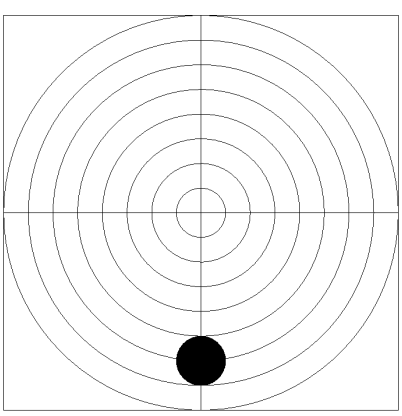


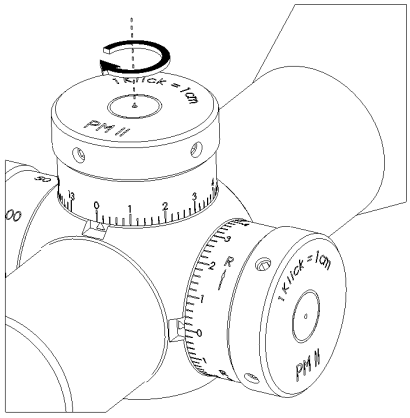
Pic

Picture 6

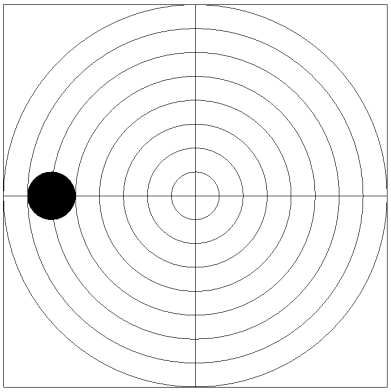


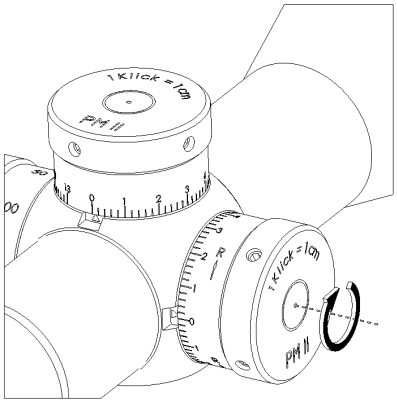
Picture 7



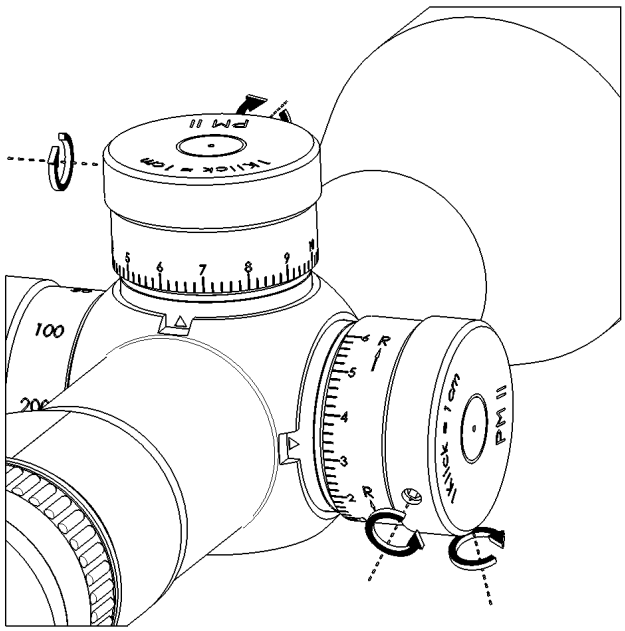


Picture 8

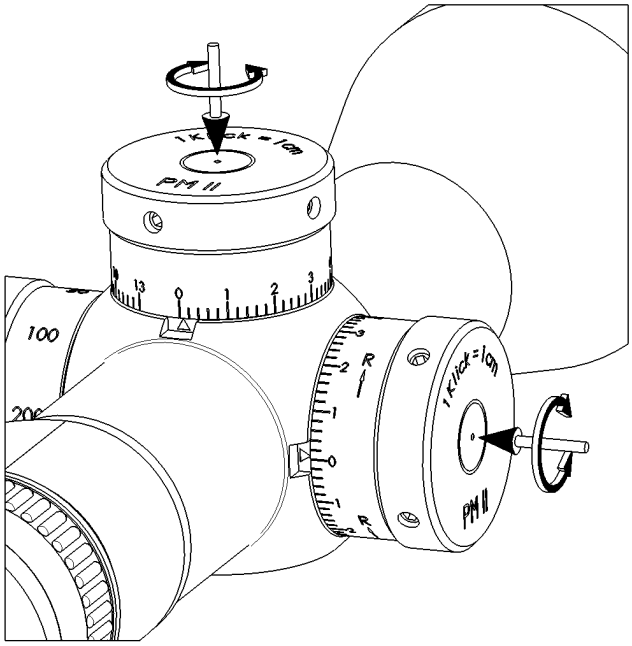




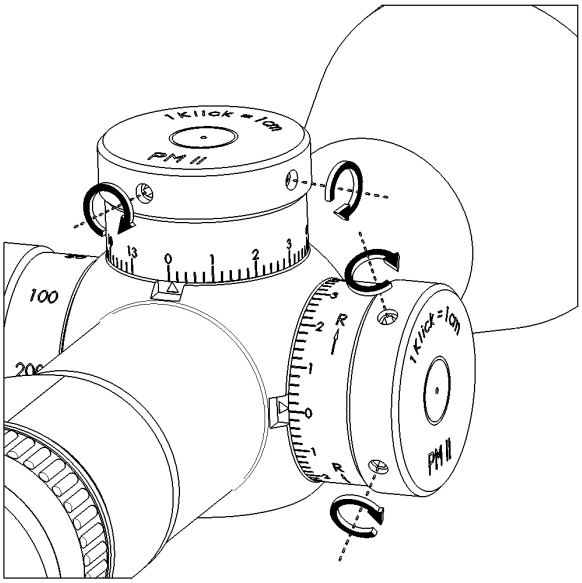
Picture 9



Picture 10

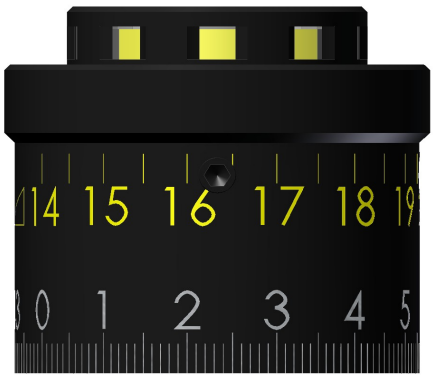


Picture 11

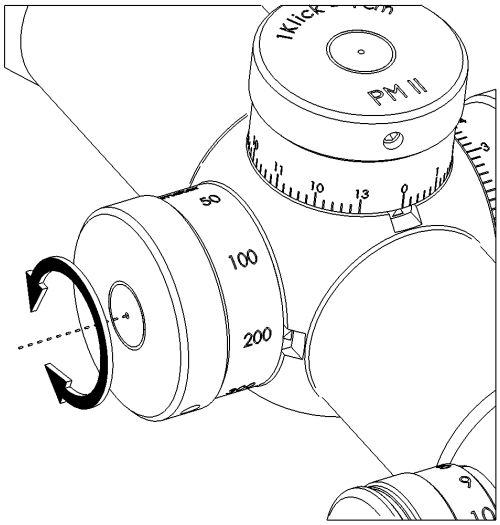


Picture 12

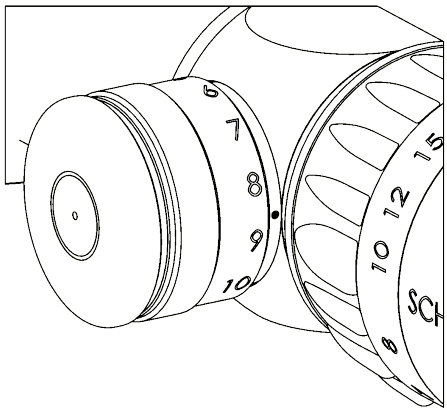
Picture 13



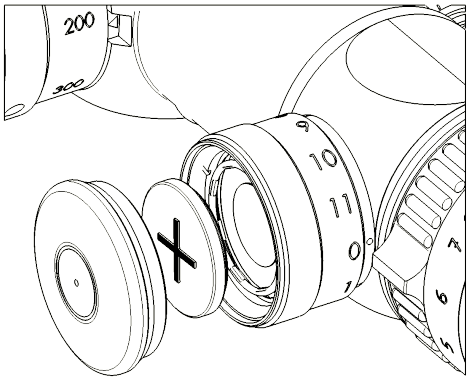
Picture 14



Picture 15



Picture 15



Picture17